

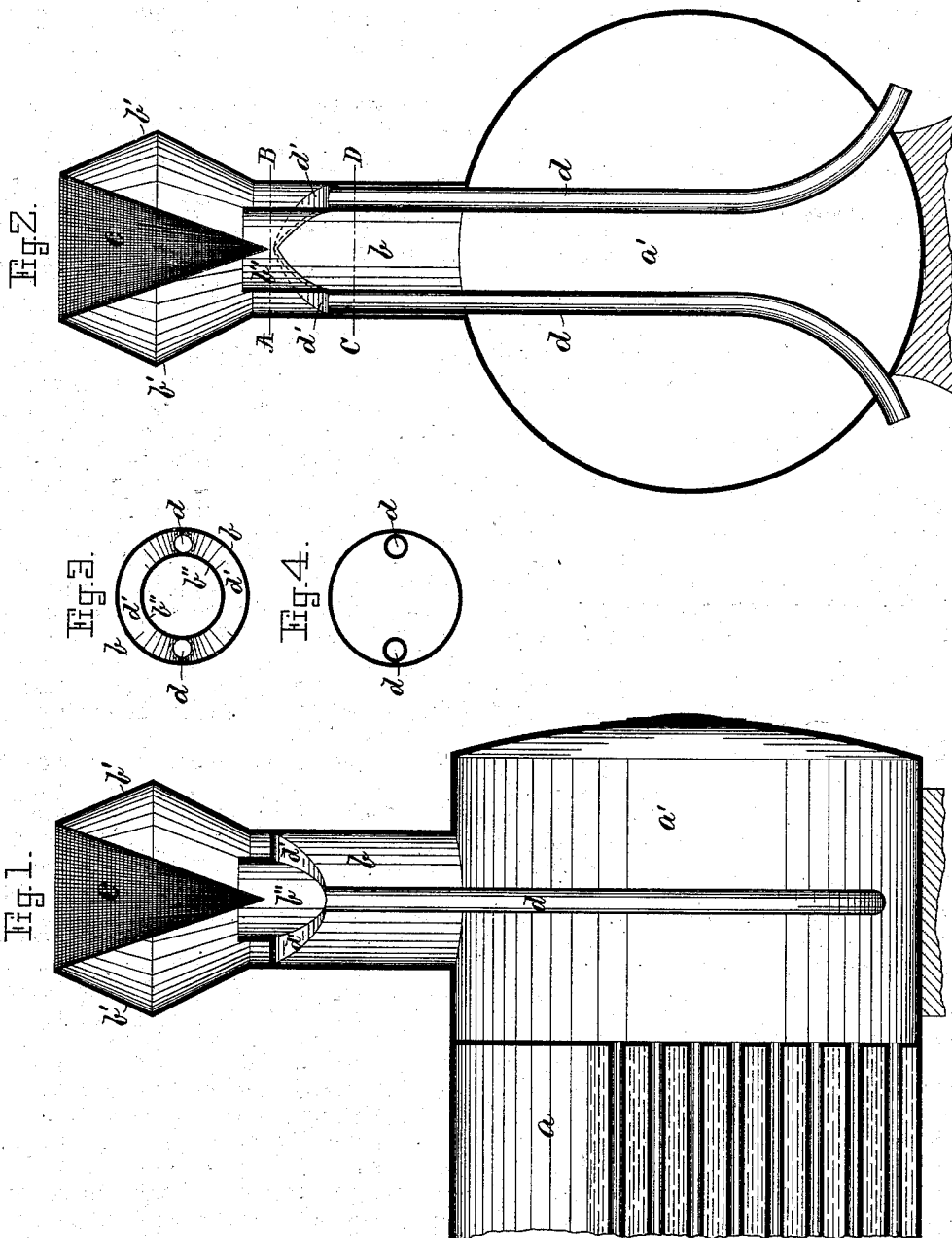
(No Model.)

A. & F. L. WATERMAN.

SPARK ARRESTER.

No. 274,867.

Patented Mar. 27, 1883.



Witnesses

Henry Chadbourne.
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UNITED STATES PATENT OFFICE.

ANTHONY WATERMAN AND FREDERICK L. WATERMAN, OF BOSTON, MASS.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 274,867, dated March 27, 1883.

Application filed November 1, 1882. (No model.)

To all whom it may concern:

Be it known that we, ANTHONY WATERMAN and FREDERICK L. WATERMAN, both citizens of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have jointly invented certain new and useful Improvements in Spark-Arresters; and we do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to improvements on spark-arresters for locomotives or similar purposes, and it is carried out as follows, reference being had to the accompanying drawings, in which—

Figure 1 represents a central longitudinal section of a portion of the boiler and smoke-stack. Fig. 2 represents a cross-section of the boiler through the center of the smoke-stack. Fig. 3 represents a cross-section on the line A B, shown in Fig. 2; and Fig. 4 represents a cross-section on the line C D, also shown in Fig. 2.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

a represents a locomotive or other boiler, and *b* represents its smoke-stack, with upper terminus or hood, *b'*, as usual.

c is an inverted conical netting or screen, the base of which is attached to the upper edge of the hood *b'*, as shown in Figs. 1 and 2.

d d are downward-projecting pipes or tubes, preferably located within the smoke-stack *b*, and having their upper ends arranged somewhat below the apex of the conical screen *c*, as shown in Figs. 1 and 2. The pipes or tubes *d d* serve to conduct the sparks and cinders downward to be delivered on the track after being forced by the exhaust-steam or draft against the inclined curved side of the inverted conical netting or screen *c*. We do not wish to confine ourselves to the exact location of the return-pipes *d d*, as they may be arranged outside of the smoke-stack *b* as well as in its interior, or be made in the form of an annular shield surrounding the smoke-stack *b*. The number of the pipes *d d* may be two, or more or less, as may be desired, according to circumstances. When locating the return-pipes *d d* within the smoke-stack *b* we provide the latter, at or near the junction with its hood *b'*, with a short internal smoke-tube, *b''*, and close the annular space between it and the

main stack *b* by means of inclined walls *d' d'*, except at such places where the upper ends of the pipes *d d* meet the said inclines *d' d'*, as shown in Figs. 2 and 3, and in this manner the sparks or cinders which rebound in striking against the inverted conical screen *c* are properly directed and easily conducted down through the delivery-pipes *d d*, which latter are preferably made to pass through the smoke-chamber *a'*, as shown in Fig. 2, so as to deliver the cinders directly upon the track.

In using an inverted conical screen, *c*, as shown, we are enabled to use a much coarser netting without permitting the sparks or cinders to pass through, and in this manner very little, if any, obstruction is made for the draft.

The operation is as follows: The sparks and cinders which are forced upward through the smoke-stack *b* and smoke-tube *b''* strike against the curved side of the inverted netting *c* and rebound against the interior of the hood *b'* and pass down through the delivery-pipes *d d*, as above described, at the same time enabling the exhaust-steam and smoke to pass out through the perforations in the inverted conical screen *c*.

We are aware that locomotive smoke-stacks have been provided at their upper ends with hoods such as in our invention, and with screens located therein to arrest sparks, and also with pipes leading down through the stack to carry off the sparks. Such features, therefore, we do not broadly claim; but

What we wish to secure by Letters Patent, and claim, is—

The combination of the following elements, to wit: a smoke-stack, *b*, having the hood *b'* at its top, the inverted conical screen *c*, having its open base suspended from the hood and closed at its apex, the short smoke-tube *b''*, arranged directly under the apex of the cone, the two inclined walls *d' d'*, closing the annular space between the smoke-tube and the stack, and the depending pipes *d d*, having their upper ends opening respectively through the two inclined walls, the whole being constructed and arranged substantially as described.

In testimony whereof we have affixed our signatures in presence of two witnesses.

ANTHONY WATERMAN.

FREDERICK L. WATERMAN.

Witnesses:

ALBAN ANDRÉN,

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